

REMARKS

Claims 1-9 are pending in this application and 10-25 are withdrawn. By this Amendment, claims 1-9 are amended. Reconsideration of the application is respectfully requested.

The Office Action rejects claims 1-7 under 35 U.S.C. §112, second paragraph, as being indefinite. These claims are amended as suggested by the Patent Office, and now fulfill the requirements of 35 U.S.C. §112, second paragraph. Accordingly, withdrawal of the rejection of the claims under 35 U.S.C. §112, second paragraph, is respectfully requested.

The Office Action rejects claims 1-3 and 6-8 under 35 U.S.C. §102(b) over Rossman et al. (U.S. Patent No. 5,748,434); claims 1-3 and 6-8 under 35 U.S.C. §102(b) over Schneider et al. (U.S. Patent No. 6,364,957); claims 1-3 and 6-8 under 35 U.S.C. §102(b) over Dhindsa et al. (U.S. Patent No. 6,391,787); claim 4 under 35 U.S.C. §103(a) over Rossman or Schneider or Dhindsa; claim 4 under 35 U.S.C. §103(a) over Ma et al. (U.S. Patent Application Publication No. 2002/0139478); and claim 9 under 35 U.S.C. §103(a) over Rossman or Schneider in view of Dhindsa. The rejections are respectfully traversed.

In particular, none of the applied references, alone or in combination, disclose or suggest a quartz ring for use in a plasma processing apparatus that includes an inner perimeter, a main surface, a first portion of any flat first region of the main surface, a second portion of any second region adjacent to the first region on the main surface, the second region having a height lower than that of the first region, wherein the first region and the second region are regions of the quartz ring and are parallel to each other, as recited in independent claim 1 and similarly recited in independent claim 6. Support for this feature can be found in the specification at, for example, Fig. 2C and portions A-1 and A-2.

Rossmann teaches a shield for an electrostatic chuck that includes a first shield member circumscribing the chuck and a second shield member supported over the first shield member (Abstract). Thus, from this description, and upon a closer examination of Fig. 3 of Rossmann, it is clear that there are two shield members 60 and 62, which together form the shield 5. Accordingly, because the two shield members 60 and 62 are distinct, Rossmann does not teach that the first region and the second region are regions of the same quartz ring. Thus, Rossmann fails to disclose or suggest each and every feature of independent claims 1 and 6. Thus, independent claims 1 and 6, and their dependent claims, are patentable over Rossmann.

Schneider teaches a substrate support assembly that includes a substrate support and a collar which may comprise at least one slit (Abstract). Moreover, a closer examination of Schneider, in, for example, Figs. 4A-4D show that Schneiders' outer ring is flat, and thus does not include a first region and a second region, the second region having a height lower than that of the first region, as recited in the independent claims. Moreover, Schneider fails to disclose or suggest that the first region and the second region are parallel. Accordingly, Schneider fails to disclose or suggest each and every feature of independent claims 1 and 6. Thus, independent claims 1 and 6, and their dependent claims, are patentable over Schneider.

Dhindsa teaches a plasma discharge electrode having a front surface with a central portion thereof including gas outlets discharging a processed gas which forms a plasma and a peripheral portion substantially surrounding the gas outlets (Abstract). Moreover, Dhindsa teaches that the upper electrode 10 is a one piece monolithic electrode with an integral step 11 (col. 7, lines 28-39; Fig. 1B). However, the step 11 is not a quartz ring surrounding the electrode. In fact, the step 11 has a thickness t and an inner surface 12 that forms an angle α with the central portion of the upper electrode, and as such is not equivalent to the claimed quartz ring of independent claims 1 and 6. Furthermore, the electrode 10 of Dhindsa could not replace the quartz ring of the claimed invention because Dhindsas' purpose is to enhance

the density of plasma formed adjacent to the exposed surface of the electrode, which may be impossible to perform on the claimed quartz ring. Thus, Dhindsa fails to disclose, suggest or render obvious each and every feature of independent claims 1 and 6. Accordingly, independent claims 1 and 6, and their dependent claims are patentable over Dhindsa.

Ma teaches a plasma chamber apparatus and method having a process kit capable of reducing or eliminating electrical arcing from exposed metal at the perimeter of a workpiece (Abstract). However, Ma fails to cure deficiencies in Rossman, Schneider and Dhindsa in disclosing or rendering obvious the features of claim 4, including the features of independent claim 1.

For at least these reasons, none of the applied references disclose or suggest the features of independent claims 1 and 6. Thus, independent claims 1 and 6, and their dependent claims, are patentable over a combination of the applied references. Accordingly, withdrawal of the rejections of the claims under 35 U.S.C. §102(b) and 35 U.S.C. §103(a) is respectfully requested.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-9 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



James A. Oliff
Registration No. 27,075

Tarik M. Nabi
Registration No. 55,478

JAO:TMN/amw

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OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400

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